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R10-MB-284

February 1995



Bohemia Mountain Timber Sale

1995 Draft Supplement to the Bohemia Mountain Supplemental Environmental Impact Statement

Stikine Area

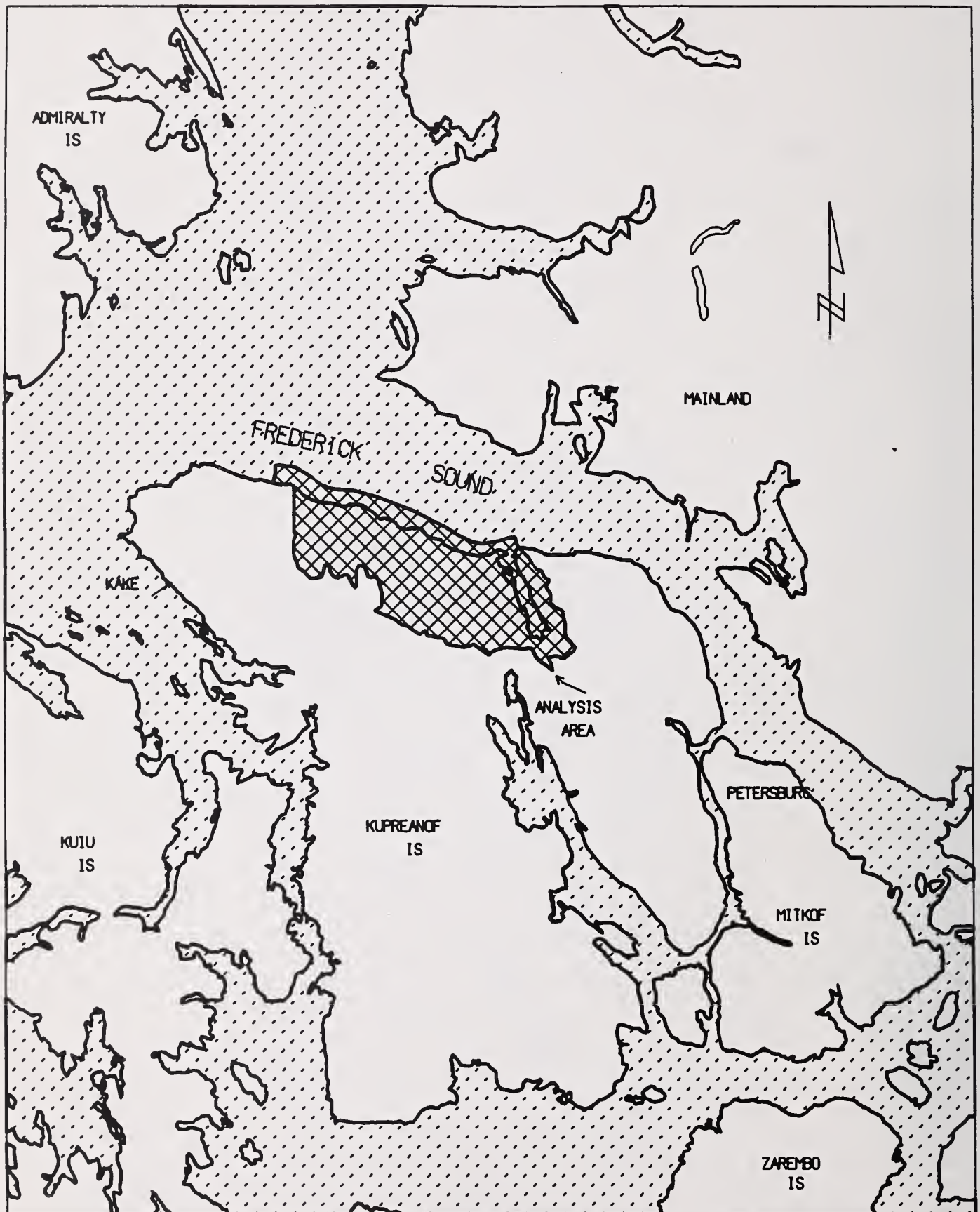
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VICINITY MAP OF BOHEMIA MOUNTAIN ANALYSIS AREA





United States
Department
of Agriculture

Forest
Service

Region 10
Tongass National Forest

Stikine Area
P.O. Box 309
Petersburg, Alaska 99833
(907-772-3841)

File Code: 1950

Date: March 8, 1995

Dear Reviewer:

Enclosed is a copy of the 1995 Supplemental Draft Environmental Impact Statement (EIS) for the proposed Bohemia Timber Sale(s), Stikine Area, Tongass National Forest, Alaska.

This document describes only the changes from the 1993 Supplemental Final EIS. Changes include the rerouting of Road 6031 around LUD II lands; additional analysis of timber harvest unit 541; and management objectives for sensitive species in the Bohemia Project Area. You may wish to refer to the 1993 Supplemental Final EIS for a more complete description of the proposed action, alternatives, and consequences.

The comment period on the Supplemental Draft EIS will be at least 45 days from the date on which notice of availability of the Draft EIS is published in the Federal Register, anticipated to be March 17th or March 24th. The deadline for comments is anticipated to be May 1st or May 8th.

The responsible official for the decision is Abigail R. Kimbell, Forest Supervisor of the Stikine Area, Alaska Region.

Please send written comments to Dave Helmick, USDA Forest Service, P.O. Box 309, Petersburg, AK, 99833, or call (907)772-3841 for additional information, or if you would like additional copies of the 1993 or 1995 document. The Supplemental Final EIS is expected to be completed in September 1995.

Sincerely,

ABIGAIL R. KIMBELL
Forest Supervisor

Enclosure



1995 Draft Supplement to the Bohemia Mountain SEIS

Bohemia Mountain Timber Sale

**U.S.D.A. - Forest Service
Tongass National Forest
Stikine Area
March 1995**

Responsible Agency:

*U.S.D.A. Forest Service
P.O. Box 309
Petersburg, Alaska 99833*

Responsible Official:

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**Reviewer Comments Must Be
Received By:**

May 1, 1995

Abstract: This Draft Supplement to the Bohemia Mountain Timber Sale EIS describes the resolution of three appeal issues regarding harvesting timber in the Bohemia Mountain study area.

Content and Organization of the Supplement

Content

This Draft Supplement to the Bohemia Mountain Timber Sale SEIS is not intended to reiterate the content of the SEIS. Its intent is to document modifications in the EIS before publication of the Record of Decision to allow public comment and response by the Forest Service. To that end, this document is limited to how the modifications alter the analysis presented in the SEIS.

The Supplement should be viewed as an addendum to the original Bohemia Mountain Timber Sale SEIS and not as a replacement.

Organization

Chapter 1 describes the reasons for this Supplement, refines the Purpose and Need of the Bohemia Mountain Timber Sale, and identifies the issues addressed in the FSEIS that are potentially affected by changes in the action alternatives.

Chapter 2 discusses how the proposed modifications affect the four action alternatives.

Chapter 3 describes changes to the Affected Environment resulting from the proposed modifications.

Chapter 4 provides thorough descriptions of the modifications and their effects.

Summary

Summary

Introduction

This summary covers the Final Supplemental Environmental Impact Statement for the Bohemia Mountain Timber Sale and this supplement. The additional information in the supplement is related to a modified alternative resulting from the Narrows Conservation Coalition appeal and some additional analysis. This summary replaces the summary in the Final Supplemental Environmental Impact Statement for the Bohemia Mountain Timber Sale.

This document displays the results of analyses to determine whether to implement or defer a timber sale on North Kupreanof Island under the direction of the current Forest Plan.

The project proposed in this document is one or more timber offerings designed to supply timber for the Stikine Area timber sale program. Timber sales are scheduled by the Forest Plan in order to maintain a supply of timber for southeast Alaska. In the Forest Plan, the analysis area was given Land Use Designations (LUD) IV and II.

LUD IV areas provide opportunities for intensive development of resources. Emphasis is primarily on commodity, or market resources and their use. Amenity values are also considered. When conflicts over competing resource uses arise, conflicts would most often be resolved in favor of commodity values. Allowances in calculated potential timber yield have been made to provide for protection of physical and biological productivity.

LUD II areas are to be managed in a roadless state to retain their wildland character, but permit wildlife and fish habitat improvement and primitive recreational facility development. Roads will not be built except to serve authorized activities such as vital Forest transportation system linkages. The original FSEIS included an alternative that would have constructed a road through the LUD II area. That alternative is modified in the supplement so that the road goes around the LUD II.

Proposed Action

The Stikine Area of the Tongass National Forest proposes to offer up to 35 million board feet of commercial saw timber and associated road system within the Bohemia Mountain area on north Kupreanof Island. The timber may be sold in one or more timber sales beginning in 1995, and would be transported to salt water over the little Hamilton and Portage Bay log transfer facilities.

Purpose and Need

The primary purpose and need for the Bohemia Mountain Timber Sale is to meet the goals of the Forest Plan by providing between 10 and 40 million board feet of timber for harvest and providing for long-term transportation needs of National Forest visitors and administration. Current inventory data shows that the project area could easily provide this much volume while meeting all existing standards and guidelines for timber harvest and road construction.

Summary

The Tongass Timber Reform Act directed the Forest Service through the Secretary of Agriculture "to the extent consistent with providing for multiple use and sustained use of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber and (2) meets the market demand from such forest for each planning cycle." This project is one part of a timber management program designed to meet that direction. A recent timber market assessment (Morse, K. 1994) confirms that there is available capacity and strong market demand for this timber.

Decisions to be Made

- a. Will a timber sale and associated roads be offered in the planning area at this time?
- b. If a sale takes place, how much timber will be cut; where will the units and roads be located; which log transfer facility(s) will be used; and where will the camp and sort yard be built?
- c. If a sale takes place, what special measures would be needed to protect fish, wildlife, recreation, subsistence, and visual resource values?

Issues

Alternatives were developed to address the issues that were identified by the public and by Forest Service resource specialists. The issues addressed are:

1. Potential effects of timber harvest on water quality, fisheries and soils
2. Potential effects on wildlife and wildlife habitat
3. Effects on subsistence resources and users
4. Effects on recreation resources and users
5. Effects on the Wilderness Area and associated values
6. Potential impacts to heritage resources
7. Maintenance of scenic quality
8. An economically viable timber sale
9. An appropriate transportation system, including a Kake/Portage road connection
10. Effects on the candidate Wild and Scenic River designation

Additional issues addressed in this supplement are:

1. Roving through LUD II lands
2. Adding logging units between draft and final SEIS
3. Incomplete "Sensitive" species analysis
4. Additional wetlands analysis
5. Effects on candidate species

Alternatives Considered

Alternative 1

The "No Action" alternative would defer timber harvest and road construction.

Alternative 3

This alternative was developed to defer harvest on Bohemia Mountain and to maintain old growth wildlife habitat. Its objectives were to avoid wildlife habitat fragmentation and to provide an economic offering. Units are concentrated in Portage Bay and old growth habitat fragmentation is minimized. This is the only alternative that projects a positive mid-market value. However, based upon current market conditions and demands for timber resources, other alternatives are anticipated to produce stumpage values above base rates (minimum rate the USFS will sell timber). Approximately 10.6 million board feet of timber on 339 acres would be harvested. An estimated 0.4 mile of specified road would be constructed.

Alternative 4A

This alternative emphasizes timber cutting, while still maintaining visual quality and amenity protection. No new harvest units would occur in Portage Bay. The mainline road (6032.2) would be constructed north and west of Bohemia Mountain, avoiding the potential Wild and Scenic River corridor along Duncan Salt Chuck Creek. Approximately 18.1 million board feet of timber on 827 acres would be harvested. An estimated 22.8 miles of specified road would be constructed.

Alternative 5B

This alternative harvests the most volume. It combines the Bohemia Mountain units with those in Portage Bay. A mainline line road from Bohemia Mountain to Portage Bay would be constructed. Both the Portage Bay and Little Hamilton LTFs would be utilized. The mainline road would be constructed outside the potential Wild and Scenic River corridor along Duncan Salt Chuck Creek and outside of management area S-14, LUD II lands. Approximately 34.3 million board feet of timber on 1,381 acres would be harvested. An estimated 27.6 miles of specified road would be constructed.

Alternative 6

This alternative harvests one unit less than Alternative 5B. Approximately 33.6 million board feet of timber on 1,346 acres would be harvested. Both the Portage Bay and Little Hamilton LTFs would be utilized, but most of the volume from the Bohemia Mountain units would be hauled to the Little Hamilton LTF in this alternative. A mainline road would be constructed north and west of Bohemia Mountain, avoiding the potential Wild and Scenic River corridor along Duncan Salt Chuck Creek. An estimated 25.7 miles of specified road would be constructed.

Consequences

Water Quality and Fisheries

The risk to fisheries is estimated by several factors: (1) the total length of roads, (2) the total number of stream crossings, (3) the total length of buffered and unbuffered Class I and II stream channels, and (4) the total acres of harvest within fish stream watersheds. While any harvest activity poses some risk to resources, no measurable effects are anticipated to fisheries or water quality, and there should be no habitat-related reduction in the fish population if Best Management Practices and Aquatic Habitat Management Unit guidelines are followed.

Alternatives 5B and 6 would pose the greatest potential risk to fisheries in terms of the number of Class I and II watersheds entered, total existing and proposed road miles, number of stream crossings, and amount of acres harvested. Evaluated by the same criteria, Alternative 3 would pose the least potential risk to fisheries of the action alternatives.

Summary

Wildlife Habitat

All action alternatives would harvest some acres of high value wildlife habitat. Alternatives 4A, 5B, and 6 harvest 5 acres (0.2%) of high value eagle habitat. High value otter habitat harvested ranges from 8 acres (0.2%) in Alternative 3 to 19 acres (0.5%) in Alternative 5B. High value black bear habitat harvested ranges from 281 acres (1.3%) in Alternative 3 to 1,210 acres (5.5%) in Alternative 5B. High value marten habitat harvested ranges from 179 acres (2.1%) in Alternative 3 to 617 acres (7.1%) in Alternative 5B. High value deer habitat harvested ranges from 211 acres (3.7%) in Alternative 4A to 597 acres (14.4%) in Alternative 5B. No alternatives allow harvesting within 500 feet of the beach fringe or within 1,000 feet of estuaries.

Subsistence

Three key factors are used to assess subsistence impacts: access, changes in competition with non-rural users, and the abundance and distribution of subsistence resources.

Traditional means of access to the analysis area is by boat, foot, motorized vehicle or float plane. The existing road system allows seasonal access to a portion of the study area on north Kupreanof Island. The proposed roads will increase access to the area from Kake by adding 5.0 miles of road in Alt. 5B, 22.8 miles of road in Alt. 4A; and 25.3 miles of road in Alt. 6.

No increase in competition from non-rural users is anticipated. This conclusion is based on several factors: subsistence use in the area has been very low in the past, the road system will not connect Portage Bay to Kake, and the Portage Bay logging camp will only be used on an intermittent basis.

Changes in the abundance and distribution of subsistence resources are projected to be minimal, with the exception of the Sitka black-tailed deer.

Recreation

The primary recreation place that would be impacted by timber harvest is the Portage Mountain Loop Trail. The mainline road in Alternative 5B would cross this trail in two places. Some changes in the Recreation Opportunity Spectrum (ROS) class would occur within the analysis area under any of the action alternatives.

A public recreation cabin was constructed at West Point in Portage Bay during 1994. Impacts to cabin users from timber harvest would include changes to the view from the site due to roading and timber harvest, and noise coming from equipment used to sort and load logs at the LTF site.

Wilderness

Alternatives 5B and 6 would have an impact on the Wilderness ROS setting. About 160 acres of the Petersburg Creek-Duncan Salt Chuck Wilderness could be affected by logging and road building activities occurring adjacent to the Wilderness.

Heritage Resources

No heritage resource sites were discovered in any of the planned timber harvest units during field survey. The Alaska State Historic Preservation Officer has concurred with the Forest Service finding that no heritage resource sites would be affected.

Scenic Quality

All of the action alternatives would have visual effects on viewers travelling in Portage Bay and along the Frederick Sound shoreline. Generally, the short term effects of the helicopter-logged clearcuts would be less than those associated with the cable yarded units, because fewer roads would be necessary and more vegetation would be left standing after harvest. A segment of road 6031 as it was realigned around the LUD II lands may be seen from Portage Bay. However, it will not affect the visual quality objective for that area.

Timber Sale Economics

Only Alternative 3 is projected to show a positive mid-market value. The mid-market assessment is based on weighted average pond log values, estimated logging and roading costs, normal profit ratios, and base rates in effect on January 22, 1990. The negative net values on the other action alternatives reflect the capital investment in specified road construction.

Transportation

No alternatives construct a Kake/Portage road connection and no alternative constructs road within LUD II designated lands. The Alternative 5B road connection would haul timber from Bohemia Mountain to the Portage Bay Log Transfer Facility (LTF). Alternatives 4A, 5B and 6 would also use the Little Hamilton LTF and maintain two existing separate road systems.

Candidate Wild and Scenic River Designation

No alternative comes within one-half mile of the Wild and Scenic River candidate Duncan Salt Chuck Creek. Decisions on suitability for wild, scenic or recreation river designation is deferred to the Forest Plan Revision process. Units visible from within one-half mile from the creek have been given special emphasis and now meet the visual quality objective of "partial retention".

Mitigation of Consequences

If an action alternative is selected, the following steps are required:

- (a) Minimum 330-foot buffers will be maintained around eagle nest trees.
- (b) All known or discovered heritage sites will be protected. If additional sites are discovered once the sale is in operation, protective measures will be taken under the timber sale contract provisions.
- (c) Full bench construction and removal of excess excavated material will be required on designated areas for soil stability.
- (d) Pursuant to the Tongass Timber Reform Act, there will be no commercial timber harvesting within a buffer zone no less than one hundred feet in width on each side of all Class I streams, and those Class II streams which flow directly into a Class I streams. In addition, stream protection will include provision of buffer areas and other protective actions consistent with aquatic habitat management unit (AHMU) guidelines pertaining to (1) unstable banks, (2) temperature sensitivity, (3) sedimentation, and (4) large, woody debris for rearing habitat, nutrient retention, and streambed stabilization.
- (e) Class III channels will receive appropriate protection according to Best Management Practices (BMPs, see Forest Service Handbook 2509.22). See unit descriptions, Appendix A, for specific BMPs.
- (f) The scenic quality will be protected to meet the visual quality objectives for the Bohemia Mountain Analysis Area as stated in the current Forest Plan. Landscape design principles will be used to locate and design rock pits, sort yards, and other related facilities.
- (g) Rock pit and roadside rehabilitation will be implemented in areas that are heavily disturbed.

Alternative Preferred by the Forest Service

After reviewing all resource impacts, consequences, and opportunities, Alternative 5B was identified as the preferred alternative.

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Chapter 1

Purpose and Need

Chapter 1

Purpose and Need

Background

This document presents supplemental information to the analysis documented in the Bohemia Mountain Timber Sale FSEIS of July 1993. The additional information presented in this supplement is related to a modified alternative resulting from the Narrows Conservation Coalition appeal and some additional analysis. The reader will need both documents to get a complete picture of the proposed action, alternatives being considered, and the effects of those alternatives.

Appeal

On December 27, 1993, the Narrows Conservation Coalition filed an appeal of the Record of Decision (ROD) regarding the Bohemia Mountain Timber Sale Final Supplemental Environmental Impact Statement (FSEIS) and requested that implementation of the ROD be stayed. On January 6, 1994, a Request for Stay was granted. The City of Kupreanof, the Alaska Forest Association and Michael Medalen were granted intervenor status.

A review was conducted by the Alaska Regional Forester. Discussion of the following issues was found not to fully meet the requirements of the CEQ NEPA regulations, Forest Service Manual and Handbook direction, and the Forest Plan. The appellants and intervenors were notified by mail on April 11, 1994.

Issue I: Roading through LUD II lands is not justified.

Issue II: The Forest Service added Unit 541 following publication of the supplemental draft.

Issue III: "Sensitive" species list and management objectives for all such species existing in the Bohemia Project Area was incomplete.

Additional Analysis

Wetlands

In addition to these Appeal Issues, this supplement will analyze and directly address the values and functions of wetlands.

Wolves

This supplement will analyze the impacts of the timber sale on the Alexander Archipelago wolf. This wolf was recently added to the U.S. Fish and Wildlife's Candidate Species list.

Proposed Action

The Stikine Area of the Tongass National Forest proposes to offer up to 35 million board feet of commercial saw timber and associated road system within the Bohemia Mountain area on north Kupreanof Island. The timber may be sold in one or more timber sales beginning in 1995, and would be transported to salt water over the Little Hamilton and Portage Bay log transfer facilities.

Purpose and Need

The primary purpose and need for the Bohemia Mountain Timber Sale is to meet the goals of the Forest Plan by providing between 10 and 40 million board feet of timber for harvest and providing for long-term transportation needs for National Forest visitors and administration. Current inventory data shows that the project area could easily provide this much volume while meeting all existing standards and guidelines for timber harvest and road construction.

The Tongass Timber Reform Act directed the Forest Service through the Secretary of Agriculture to, "to the extent consistent with providing for multiple use and sustained use of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber and (2) meets the market demand from such forest for each planning cycle." This project is one part of a timber management program designed to meet that direction. A recent timber market assessment (Morse, K. 1994) confirms that there is available capacity and strong market demand for this timber.

Issues

Issues were categorized in Chapter 1 of the FSEIS. This Supplement addresses the same issues, but only to the extent that associated environmental consequences are affected by the proposed modifications.

The issues that are addressed are:

1. Potential effects of timber harvest on water quality, fisheries and soils
2. Potential effects on wildlife and wildlife habitat
3. Effects on subsistence resources and users
4. Effects on recreation resources and users
5. Effects on the Wilderness Area and associated values
6. Potential impacts to heritage resources
7. Maintenance of scenic quality
8. An economically viable timber sale
9. An appropriate transportation system, including a Kake/Portage road connection
10. Effects on the candidate Wild and Scenic River designation

Additional Issues addressed in this supplement are:

1. Rading through LUD II lands
2. Adding logging units between draft and final SEIS
3. Incomplete "Sensitive" species analysis
4. Additional Wetlands analysis
5. Effects on "Candidate" species

Chapter 2

Alternatives

Chapter 2

Alternatives

Modifications to Alternatives

- The modifications associated with Appeal Issue I (Roading through LUD II designated lands) affect only Alternative 5B.
- Resolution of Appeal Issue II (Addition of Unit 541) and Appeal Issue III (Sensitive Species) have no effect on the alternatives.
- The expanded wetlands analysis had no effect upon the alternatives.
- The Candidate Species effects analysis had no effect on the alternatives.

Alternative 5B

This summary of Alternative 5B replaces the summary found in the FSEIS, Chapter 2, page 10.

Objective

Alternative 5B was designed to harvest the greatest volume of timber. Both the Portage Bay and the Little Hamilton LTFs would be used; most of the timber would be hauled to the Portage Bay LTF. Harvest units are located on the south and east sides of Bohemia Mountain and in east Portage Bay.

Volume and Acreage of Timber Harvested In Alternative 5B by Logging System

	Timber (MMBF)	Acres Harvested
Cable Logging Systems	26.7	1,147
Shovel Logging Systems	2.3	100
Helicopter Logging Systems	5.3	134
All Logging Systems	34.3	1,381

Impacts

Water and Fisheries. Road construction under this alternative would require 35 stream crossings. Three and one-half miles of stream would be buffered adjacent to harvest units.

2 Alternatives

Wildlife. The percentage reduction in high value habitat for each of the five Management Indicator Species would be:

- Within VCU 442: bald eagle, 0%; otter, 0.7%; black bear, 8.2%; marten, 10.2%; and Sitka black-tailed deer, 13.4%.
- Within VCU 424: bald eagle, 0.4%; otter, 0.4%; black bear, 4.7%; marten, 5.4%; and Sitka black-tailed deer, 8.1%.

This alternative harvests the greatest amount of high value wildlife habitat (See Table 2-11 in FSEIS).

Subsistence. Alternative 5B has some potential to affect subsistence resources. There would be increased access to the Bohemia Mountain area from the Portage Bay logging camp and more competition for subsistence resources. Habitat for some subsistence resources may be affected.

Wilderness. Approximately 160 acres of semi-primitive non-motorized ROS setting within the Wilderness would change to a roaded modified setting because the road and timber harvesting activities outside the Wilderness would be partially audible and visible within the Wilderness Area.

Scenic Quality. Alternative 5B would visually affect Portage Bay to a slightly greater degree than Alternatives 3 or 6. Effects of past and proposed activities east of Portage Bay would likely meet a "partial retention" VQO near the mouth and a "modification" VQO near the head of the bay. As seen from Portage Bay, activities west of the bay would likely produce a visual condition of "modification." Scenic quality from Frederick Sound would likely meet a "modification" VQO. As seen from Bohemia Lakes, proposed harvest would likely meet a VQO of "partial retention." Proposed helicopter units east of Portage Bay would likely meet a VQO of "partial retention."

Timber Sale Economics. Alternative 5B harvests the most volume and builds the greatest amount of road. The helicopter logging units in this alternative are the same as for Alternatives 3 and 6.

The mid-market assessment is based on weighted average pond log values, estimated logging and roading costs, normal profit ratios, and base rates in effect on the date the Forest Service initiates the NEPA process with publication of a Notice of Intent in the Federal Register. The initial Notice of Intent for Bohemia Mountain Timber Sale EIS was published in the Federal Register on Monday, January 22, 1990.

This mid-market net value reflects the capital investment in 27.6 miles of specified road. The capital investment for this road at this time may result in positive net values on future entries.

Transportation. Proposed road 6031 originally passed through LUD II lands and has been rerouted around the LUD II lands. This action lengthens road 6031 by approximately 0.5 mile. A spur road approximately 1.8 miles long is needed to access Unit 541. See Map 2-1. This alternative would construct approximately 27.6 miles of system road. Both Portage Bay and Little Hamilton LTFs would be used.

Map 2-1. LUD 2 By-Pass Route

- Proposed Roads
 - Original Proposed Road
 - Existing Road
 - Alt 5B Unit Boundary
 - Elevation Contours
 - Shoreline
- LUD 2

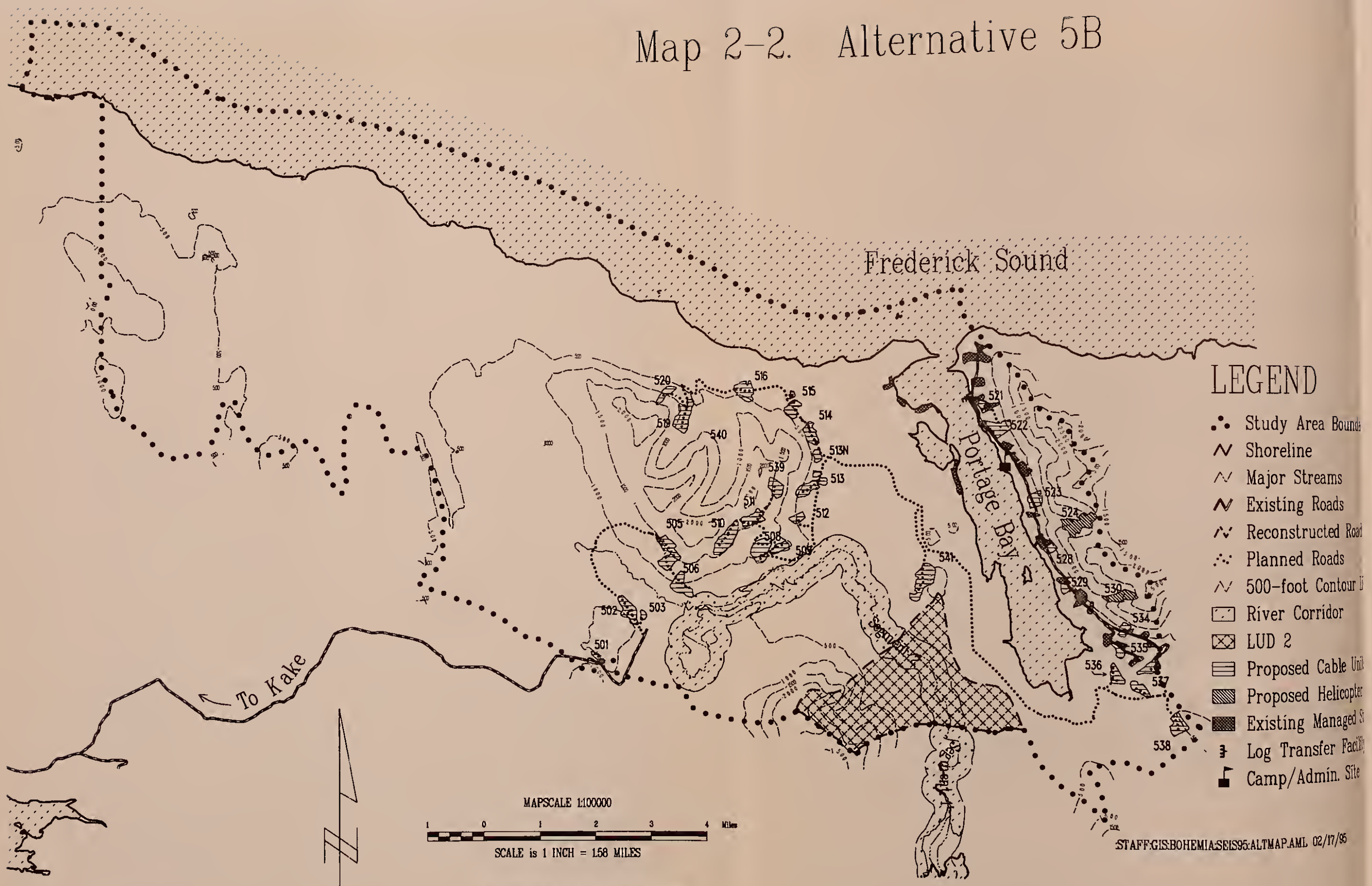


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Portage Bay

Alternatives 2

Map 2-2. Alternative 5B



STAFF:GIS:BOHEMIA:SEIS95:ALTMAP.AML 02/17/95

Comparison Tables Tables 2-1 through 2-13 are displayed here as a condensed comparison of Alternatives. With few exceptions they are shown exactly as they appear in the FSEIS. Tables 2-3, 2-4, and 2-8 reflect changes due to the realignment of road 6031 in Alternative 5B.

Timber Management

Table 2-1- Comparison of Timber Harvest Characteristics by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Total Sawlog Volume (MMBF)	0	10.6	18.1	34.3	33.6
Units over 100 acres	0	0	0	0	0
Proposed Acres Harvested (for the Bohemia Mountain Sale)	0	339	827	1381	1346
Cumulative Acres Harvested (within the Analysis Area)	382	721	1209	1763	1728

Table 2-2 Comparison of Proposed CFL Harvest by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Percentage of CFL Harvested					
Bohemia Mountain Sale	0%	1.2%	2.8%	4.9%	4.8%
Cumulative Harvest Activity in the Analysis Area	1.5%	2.7%	4.3%	6.4%	6.3%
Percentage of Adjusted Operable CFL Harvested					
Bohemia Mountain Sale	0%	2.3%	5.2%	9.2%	9.1%
Cumulative Harvest Activity in the Analysis Area	2.8%	5.1%	8.0%	12.0%	11.9%
Percentage of Standard Adjusted Operable CFL Harvested					
Bohemia Mountain Sale	0%	2.7%	9.5%	15.2%	14.9%
Cumulative Harvest Activity in the Analysis Area	5.0%	7.7%	14.5%	20.2%	19.9%
Acres of Standard Adjusted Operable CFL Harvested					
Bohemia Mountain Sale	0	205	827	1,247	1,212
Cumulative Harvest Activity in the Analysis Area	382	587	1,209	1,629	1,594
Percentage of Non-standard Adjusted Operable CFL Harvested					
Bohemia Mountain Sale	0%	2.2%	0%	2.2%	2.2%
Cumulative Harvest Activity in the Analysis Area	0%	2.2%	0%	2.2%	2.2%
Acres of Non-standard Adjusted Operable CFL Harvested					
Bohemia Mountain Sale	0	134	0	134	134
Cumulative Harvest Activity in the Analysis Area	0	134	0	134	134

2 Alternatives

Roads

Table 2-3 Miles of Road Constructed by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Specified Road Construction	0	0.4	22.8	27.6	25.7
Spur Road Construction	0	0.7	2.2	5.6	3.6
Road Reconstruction	0	0.4	0	0.4	0.4

Economics

Table 2-4 Comparison of Mid-Market Timber Sale Economics by Alternative

	1	3	4A	5B	6
Total Pond Log Selling Value (minus 60% normal profit) (\$/MBF)	0	234	243	241	241
Total Costs to the Operator (\$/MBF)	0	203	400	325	327
Mid-Market Net Value (\$/MBF)	0	31	-157	-84	-86

Scenic Quality

Table 2-5 Visual Quality Objectives Resulting from the Cumulative Effects of Timber Harvest

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
VQO from Frederick Sound (TLMP direction: PR-M)	R	P-R	R-M	PR-M	PR-M
VQO from Portage Bay (TLMP direction: PR-MM)	PR	PR-M	PR-M	PR-M	PR-M
VQO from Bohemia Lakes	P	PR	PR	PR	PR

P = Preservation, R = Retention, PR = Partial Retention, M = Modification, MM = Maximum Modification (See Glossary for further clarification)

Table 2-6 Visibility of Proposed Activities - Percent of Proposed Harvest Acres Seen From Sensitive Viewpoints In Frederick Sound and Portage Bay.

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Bohemia VCU 424	0%	0%	49%	47%	47%
Portage VCU 442	88%	91%	0%	77%	77%

* Note: 30 percent of the total CFL can be seen in VCU 424, and 80 percent of total CFL can be seen in VCU 442

Table 2-7 Cumulative Percent of Seen CFL Acres Visually Affected by Past and Proposed Management Activities

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Bohemia VCU 424	0	0	9	9	9
Portage VCU 442	10	21	10	23	23

* Note: Nine percent of VCU 424 is seen CFL; 28 percent of VCU 442 is seen CFL. The numbers shown are percents of these totals; that is, past and proposed harvest with Alternative 3 would modify 21 percent of the 28 percent that is available in the Portage Bay VCU.

Fisheries/Water Quality

Table 2-8 Comparison of Impacts on Water Quality and Fish Habitat by Alternative.

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Number of Stream Crossings					
Bohemia Mountain Sale	0	3	31	37	36
Cumulative Number of Crossings in the Analysis Area	24	27	55	61	60
Number of Fish Watersheds (out of 10 total) Affected by Harvest					
Bohemia Mountain Sale	0	1	4	5	5
Cumulative Number of Watersheds Affected in the Analysis Area	1	1	5	5	5
Average Percentage of Fish Stream Watershed Area Harvested					
Bohemia Mountain Sale	0%	0.3%	1.5%	2.2%	2.2%
Cumulative Percentage of Fish Stream Watershed Area Harvested	0.3%	0.6%	1.8%	2.5%	2.5%

2 Alternatives

Table 2-9 Miles of Buffered Streams by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Bohemia Mountain Sale	0	0.88	1.86	3.52	3.52
Cumulative Number in the Analysis Area	0.55	1.43	2.41	4.07	4.07
Within Bohemia VCU 424	0	0.00	1.86	2.34	2.34
Within Portage VCU 442	0	0.88	0.00	1.18	1.18

Table 2-10 Miles of Unbuffered Streams by Alternative ¹

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Bohemia Mountain Sale	0	2.93	1.78	4.89	4.89
Cumulative Number in the Analysis Area	1.25	4.18	3.03	6.14	6.14
Within Bohemia VCU 424	0	0.00	1.78	1.78	1.78
Within Portage VCU 442	0	2.93	0.00	3.11	3.11

¹ Unbuffered streams are Class II streams not directly feeding into Class I streams and Class III water quality streams affected by proposed harvest and road activities where AHMU prescriptions will be applied.

Wildlife Habitat

Table 2-11 Comparison of High Value Wildlife Habitat Acres Impacted by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Eagle Habitat Acres Harvested	0	0	5	5	5
Otter Habitat Acres Harvested	0	8	8	19	16
Bear Habitat Acres Harvested	0	281	699	1,210	1,119
Marten Habitat Acres Harvested	0	179	256	617	572
Deer Habitat Acres Harvested	0	236	211	597	551

Subsistence

Table 2-12 Possibility of a Significant Restriction of Subsistence Resources by Alternative (Excluding Deer) ¹

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Abundance/Distribution	No	No	No	No	No
Access	No	No	No	No	No
Competition	No	No	No	No	No

¹ "Yes" indicates that there may be a significant restriction and "No" indicates there is no significant possibility of a significant restriction.

Table 2-13 Possiblity of a Signficant Restriction of Deer for Subsistence Users by Alternative.

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Abundance/Distribution	No	Yes	No	Yes	Yes
Access	No	No	No	No	No
Competition	No	No	No	No	No

Identification of the Forest Service Preferred Alternative

The Bohemia Mountain ID Team met with the Forest Supervisor and Staff Officers to select the alternative preferred by the Forest Service. After reviewing all resource impacts, consequences, and opportunities

Alternative 5B was identified as the preferred alternative.

Chapter 3

Affected Environment

Chapter 3

Affected Environment

Introduction

This chapter describes the environment of the Bohemia Mountain analysis area. The information has been taken from more detailed resource reports that are available for public review in the planning record. The planning record is located at the Stikine Area Supervisor's office, in Petersburg, Alaska.

Included in this supplement are only the environments that are not described in or have changed since publication of the FSEIS.

Wetlands

The following replaces the discussion on wetlands in the Bohemia FSEIS, Chapter 3, pages 7-8.

Wetlands are defined as: "those areas that are inundated or saturated by surface or ground water with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (40CFR 230.41(a)(1)). Identification of wetlands is based on the Corps of Engineers three-parameter system described in U.S. Army Corps of Engineers Wetlands Delineation Manual (COE 1987). Wetlands are identified as areas having hydric soils, hydrophytic vegetation, and wetland hydrology. Soil resource inventory maps, including correlations between soil series and plant communities were used to determine the extent of wetlands in the Bohemia study area. Hydrologic parameters were inferred from the soil moisture regime.

Using this wetland definition and delineation method, approximately 70 percent (47,616 acres) of the Bohemia study area is classified as wetland. These extensive wetlands are not all alike but consist of at least six different types of wetlands. (Table 3-1). Each wetland type has different soil and vegetative communities, occupies different landscape positions, and has somewhat different functions and values. Map 3-1 shows the location and extent of these wetland types within the Bohemia area.

Table 3-1 Distribution of Wetland Types In the Analysis Area

Wetland Type	Area (acres)	Percent of Analysis Area
Forested Wetland	30,030	44%
Bog (Muskeg)	16,171	24%
Subalpine Wetlands	1,043	2%
Fens	107	<1%
Salt Marshes	41	<1%
Lakes and Ponds	244	<1%
Total	47,616	70%

Forested Wetlands

Forested wetlands, as used here, consist primarily of coniferous treed slope bogs, some of which occur in an intricate mosaic pattern with small open bogs. Forested wetlands are plentiful throughout the area and represent about 44 percent of the Bohemia study area. Tree cover ranges from a minimum of 10 percent to about 60 percent canopy cover of trees at least 25 feet tall. Plant communities consist primarily of Mixed Conifer/Blueberry/Skunk Cabbage, Mixed Conifer/Blueberry/Deer Cabbage, Western Hemlock/Blueberry/Skunk Cabbage, Shore Pine/Blueberry, and some Sitka Spruce/Blueberry/Skunk Cabbage, and Mountain Hemlock/Blueberry/Skunk Cabbage. Soils are primarily very poorly drained organic soils or poorly and very poorly drained mineral soils. Included in this forested wetland is a small area of floodplain swamp associated with the fen on the east side of Bohemia mountain.

Bogs

Bogs (locally called muskegs) consist of open peatlands that are dominated by sphagnum moss vegetation. Bogs are found scattered throughout the area but are most common at elevations below 500 feet. About 24 percent of the study area is bog. Less than 10 percent of the area is covered with trees more than 25 feet tall, mostly stunted shore pine with lesser amounts of western hemlock, mountain hemlock, yellow cedar and Sitka spruce. Common shrubs include Labrador tea, crowberry, mountain cranberry, dwarf blueberry, bog laurel, and bog cranberry. Soils are very poorly drained, moderately-deep to deep, extremely acid peatland soils.

Fens

Fens are open (non-forest) sloping wetlands dominated by sedges. Less than 10 percent of the area is covered with trees more than 25 feet tall, mostly Sitka spruce with lesser amounts of western and mountain hemlock and Alaska yellow cedar. Unlike bogs, fens do not usually contain shore pine. A few Oregon crab apple and highbush cranberry are common on the margin of these fens. Soils are poorly and very poorly drained, moderately-deep to deep organic soils. Soil and water in fens typically are less acid and have a higher nutrient content than bogs. These organic soils typically contain some mineral soil material as thin strata of alluvium. Fens are relatively rare on the Bohemia area.

They occupy about 107 acres, or less than one percent of the area. Most of these fens are in one area on the east toeslope of Bohemia Mountain at the headwaters of ADF&G stream no. 110-16-006, stream #7 Map 3-1.

As opposed to bogs, which get most of their water as rainfall, fens receive nutrient-enriched ground water from adjacent uplands. Nutrient status is appreciably higher than bogs, which makes for very diverse plant communities. Nutrient-enriched water supplied to aquatic systems from fens and adjacent upland ecosystems is important to maintain the productivity of the aquatic food chain.

Subalpine Wetlands

Subalpine wetlands are primarily high elevation (1800 to 2300 feet) bogs that occupy the sloping to steep summit of Bohemia Mountain and to lesser extent subalpine slopes of the Missionary Range on the east side of Portage Bay. Vegetation is dominantly sphagnum moss, low sedges and deer cabbage. Trees include widely scattered stunted mountain hemlock, yellow cedar and less frequently, shore pine. Shrubs include some alpine species, typically yellow mountain heather, Mertin's cassiope, luetkea and copperbush. Soils are typically poorly and very poorly drained shallow organic soils over bedrock. These areas accumulate a heavy winter snow pack and provide a source of runoff as meltwater during spring and early summer.

Salt Marshes

Salt marsh wetlands occupy the estuary areas in Portage Bay, and to a lesser extent, the mouth of Big Creek. These intertidal areas contain a variety of salt-tolerant sedge communities arranged according to subtle differences in elevation and corresponding frequency of salt water inundation. The higher, less frequently inundated areas typically contain highly diverse grass/sedge/forb communities with Oregon crab apple and alder trees scattered along their upper margins. Salt marshes have poorly drained mineral soils that have appreciably higher pH values and nutrient contents than other wetland types. These estuarine areas, although they are not abundant (only 41 acres, or less than one percent of the area), provide very important habitat to a wide variety of wildlife. The Portage Bay estuary also contains extensive area of unvegetated mud flats not included in acreage calculations in Table 3-1.

Lakes and Ponds

These are freshwater lakes and small ponds, most of which are surrounded by other wetlands. These small open water areas often enhance the habitat value of adjacent wetlands as well as upland ecosystems and also provide enhanced diversity on a landscape scale.

Wetland Functions and Values

Functions attributable to wetland ecosystem can be organized as follows:

Physical functions: flood conveyance, water retention and regulation, heat absorption, and sediment collection and storage.

Chemical functions: ability to accumulate significant carbon and nutrients (nitrogen).

Biological functions: provide biological diversity, produce timber (generally in lower volume classes), provide habitat for fish (salmon) and wildlife (waterfowl and bears), and provide smaller animals as part of the food web.

3 Affected Environment

Values are socio-economic benefits derived from wetland functions. These include wildlife viewing and harvest, commercial fishing (salmon habitat provided by estuaries, streams and lakes), development sites (for example, buildings and roads), community water supplies, actual and potential recreation, and timber harvesting.

The biological significance of a wetland is related to the value of its functions, and at least in part to the relative scarcity of the wetland type in the landscape. This is especially true in terms of biological diversity on the landscape scale. The relatively scarce fens and estuarine salt marshes in the Bohemia area have a greater biological significance than the more common bogs and forested wetlands which are widespread throughout the landscape.

Threatened, Endangered, Sensitive and Candidate Species

There have been changes to the threatened, endangered, sensitive, and candidate species lists since the printing of the FSEIS. The Queen Charlotte goshawk and several plant species have been added to the sensitive species list. The Alexander Archipelago wolf, the Kittlitz murrelet, and the olive-sided flycatcher have been added to the category II candidate species list. The arctic peregrine falcon has been delisted and no longer needs to be addressed. While the spectacled eider has been upgraded to threatened, while the Steller's eider has been proposed for threatened status, the U.S. Fish and Wildlife Service no longer requires the USFS to address either eider species in southeast Alaska (John Lindell, Personal Communication).

Sensitive Species

In January 1994, the Alaska Region of the USDA Forest Service released a sensitive species list that included 9 animal species and 22 plant species. *This list changes the description of existing conditions in the Bohemia Mountain Timber Sale FSEIS.*

Common Name

Montague Island tundra vole
Trumpeter swan
Dusky Canada goose
Queen Charlotte goshawk
Osprey
Peale's peregrine falcon
Northern pike
Fish Creek chum salmon
King Salmon River and Wheeler Creek king salmon

Animal Species (vertebrates): Of the nine vertebrate species listed as sensitive, only the Queen Charlotte goshawk has been sighted within the study area.

Goshawk

The goshawk, a large forest-dwelling raptor, is a year-round resident of the Petersburg Ranger District. The literature on goshawks suggests that there are two subspecies in southeast Alaska; (*Accipiter gentilis atricapillus*) which occupies much of North America and (*Accipiter gentilis laingi*), the Queen Charlotte goshawk which is found in southeast Alaska and coastal British

Columbia. The Queen Charlotte subspecies is thought to grade into the *A. g. atricapillus* subspecies on Vancouver Island and perhaps in northern southeast Alaska. Goshawks forage within home ranges that are typically 6,000 to 8,000 acres in the southwestern United States (Crocker-Bedford 1991). Recent studies within southeast Alaska suggest larger home ranges (Titus et al 1994). Studies are currently being conducted and data are being collected. Since the studies are not completed and our understanding of goshawk habitat requirements is not sufficient, the effects of the proposed sale activities on the goshawk are not known.

Candidate Species

Candidate species are those being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service or National Marine Fisheries.

The following are additions to the Candidate Species described in the FSEIS, Chapter 3, page 18-19.

Alexander Archipelago Wolf

The wolf (*Canis lupus*) was once widely distributed throughout North America, but today is restricted to the more remote and undeveloped portions of its original range. Two subspecies of wolves are recognized to occur within Alaska, one of which is the Alexander Archipelago Wolf (*C. l. lingoni*). This subspecies is currently a candidate species (category II) being considered for listing as a threatened or endangered species by the U. S. Fish and Wildlife Service. The range of the subspecies includes the islands south of Frederick Sound and the narrow mainland strip of land west of the Coast Mountains, from Dixon Entrance to Yakutat Bay (Hall 1981).

Wolves are most abundant in the southern panhandle, less abundant on the islands further north (Kuiu, Mitkof, Wrangell, and Kupreanof Islands), and least abundant on the mainland (Kirchhoff 1991). The wolf population in southeast Alaska is currently estimated at 635-690 individuals (Kirchhoff 1991).

In southeast Alaska, the primary prey are Sitka black-tailed deer, mountain goats, and moose. Wolves are present within the Bohemia Mountain Study Area and their major prey are Sitka black-tailed deer and moose.

Kirchhoff (1991) has listed three factors which may lead to wolf population declines in the next century.

- An expanding road system and increasing human population which will increase wolf mortality by increased shooting and trapping.
- Clearcut logging which reduces the habitat capability for Sitka black-tailed deer.
- Inbreeding which may reduce fitness.

Kittlitz Murrelet

This murrelet has recently been added as a category II species (see *Bohemia Mountain Timber Sale FSEIS, Chapter 3, Page 18, Candidate Species*).

Information on the Kittlitz murrelet within the Petersburg Ranger District is rather limited. Kittlitz murrelet are locally very rare with observations occurring at Thomas Bay and historical records of occurrence at LeConte Bay (Walsh, Personal Communication). In southeast Alaska, this murrelet is uncommon, with a center of distribution located at Glacier Bay, Alaska. Kittlitz murrelets nest on bare rock, some distance from the sea, primarily high, near the tops of mountains (Harrison 1987). The Kittlitz murrelet is not known to occur within the study area.

3 Affected Environment

Olive-sided Flycatcher

This flycatcher has recently been added as a category II species. The species ranges roughly from interior Alaska to Baja California, through the Rocky Mountain States and east through Canada and the New England States. Information on the olive-sided flycatcher within the Petersburg Ranger District is rather limited, but locally it is considered an uncommon breeder and a rare migrant (Walsh, personal communication). Information gathered by Walsh suggests the population is stable on Mitkof Island. We believe this is true for other areas on the district. This flycatcher utilizes semi-open areas and forest edge habitat such as beaver ponds and young managed stands (Walsh, personal communication and Blatt, personal observation).

Plants

Sensitive Plants

In January, 1994, an updated Regional Forester's sensitive species list was released for Region 10. No species of plants were listed as Threatened or Endangered. The list did contain 22 species, subspecies, or varieties of Sensitive Plants.

Plant Species: The following plant species have been identified as sensitive. Of them, one species (Choris bog orchid) is known to occur and 9 are suspected of occurring in the Bohemia Study Area, based on habitats found in the area. The 10 are indicated by an asterisk(*).

Common Name

- *Edible thistle
- *Bog orchid
- *Northern rockcress
- *Calder lovage
- *Davy mannagrass
- *Wright filmy fern
- *Straight-beak buttercup
- *Choris bog orchid
- *Circumpolar starwort
- *Loose-flowered blue-grass
- Aphragmus escholtzianus
- Kamchatka rockcress
- Smooth alkali grass
- Kamchatka alkali grass
- Tundra whitlow-grass
- Goose-grass sedge
- Norberg arnica
- Unalaska mist-maid
- Pale Poppy
- Queen Charlotte butterweed
- Truncate quillwort
- Pretty shooting star

These plants may occur on one or several habitats. Five habitats are listed as potential sites for Sensitive Plants in the Bohemia Study Area. Table 3-2 lists habitats present and Sensitive Plants that may be supported by each.

Table 3-2. Sensitive Plants Known or Suspected to Occur on the Petersburg Ranger District on Habitats Affected by the Bohemia Mountain Timber Sale

Habitat	Plant Taxa
Forest Edge	Edible thistle Wright filmy fern Calder lovage
Forest	Wright filmy fern
Open Forest	Northern rockcress Loose-flowered bluegrass
Stream-sides and River Banks	Edible thistle Davy mannagrass Straight-beak buttercup Circumpolar starwort
Muskegs	Choris bog orchid Bog orchid

The one sensitive plant found in the study area, Choris bog orchid, is associated with wet areas dominated by sphagnum. All but one plant was found in this habitat. These areas were open with little or no tree cover. Some sites were small open inclusions with noncommercial Mixed Conifer/Mountain Cranberry/Deer Cabbage plant associations. Plants most frequently associated with the orchid were: sphagnum, skunk cabbage, fern-leaf goldthread, bunchberry, deer berry, deer cabbage, mountain cranberry, swamp gentian, and arctic starflower. Other bog species were present but were less consistent in their occurrence.

Candidate Species

Two plants are listed as candidate species:

- Goose-grass sedge (Also listed as a sensitive species)
- Slim stem reed grass

Neither are found on habitats within the study area.

Recreation

The following is added to the discussion on recreation in the Bohemia Mountain FSEIS, Chapter 3, pages 26-29:

Added to the two primary developed sites identified in the FSEIS for the study area is the West Point Public Recreation Cabin, constructed during 1994. (The other two sites are the Portage Cabin and the Portage Mountain Loop Trail.)

The West Point Cabin sleeps six people and is equipped with an oil stove. It is a modified A-frame design cabin that meets universal accessibility standards. The cabin site includes a salt water access ramp, a boardwalk/deck network, and a universally accessible toilet. The cabin is in a "Semi-primitive motorized" ROS setting.

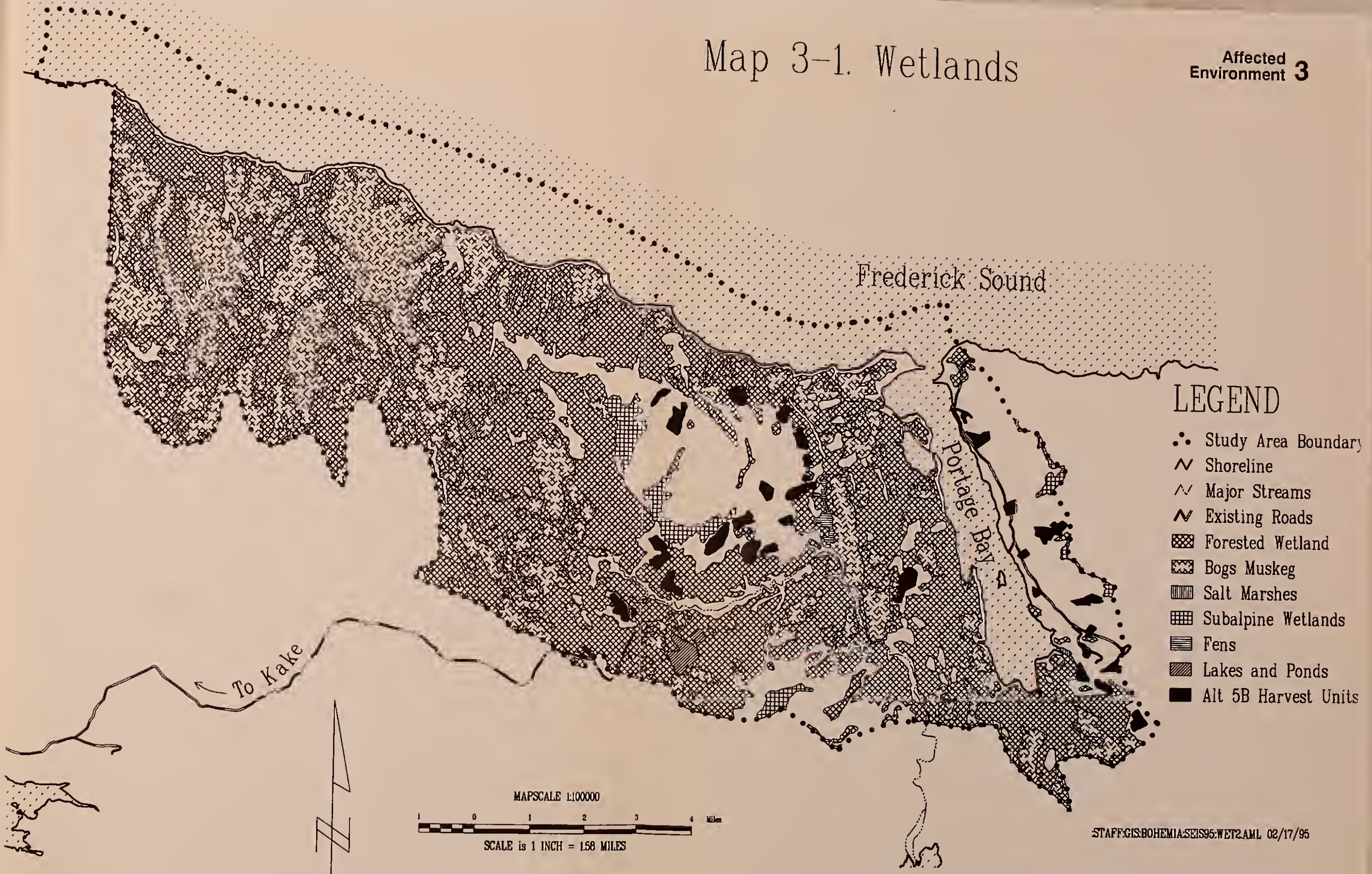
3 Affected Environment

The Petersburg Recreation Plan and Regional Capital Investment Program identified the Portage Bay Cabin as due for replacement and/or relocation due to several factors (see *FSEIS, Chapter 3, page 27, "The Portage Bay Cabin"*). The West Point Cabin is the replacement for the Portage Bay Cabin.

TLMP designated the land area at West Point as LUD IV. Most of the landscape seen from this site is designated LUD IV or LUD III. In planning for this cabin, it was acknowledged that timber harvest was expected to change the views or noise levels experienced by cabin users (see Portage Bay Public Recreation Cabin EA, 1993).

Map 3-1. Wetlands

Affected
Environment **3**



Chapter 4

Environmental Consequences

Chapter 4

Environmental Consequences

This chapter describes the physical, biological, economic, and social effects likely to result from implementing each of the alternatives. A summary of the consequences of each alternative is displayed in Tables 2-1 through 2-13 in Chapter 2. This information has been taken from more detailed reports that are available for public review in the planning record.

The impacts of the proposed modifications are addressed for each issue. The issues are presented in the same order as they occur in the Bohemia Mountain Timber Sale FSEIS. *The analysis and discussion for each issue is limited to the effects of the modifications presented in this document and do not comprise a complete reanalysis of each issue.*

Watershed

Road length and stream crossings were the only parts of the watersheds affected by the the realignment of road 6031 in alternative 5B. *The following sections replace those in the FSEIS, Chapter 4, pages 4 and 6.*

Roads and Stream Crossings

The realignment of Road 6031 crosses two more narrow width channels than the original alignment. Alternative 5B would require the most new construction of specified and spur roads (33.2 miles), followed in descending order by Alternative 6 (29.3) miles, Alternative 4A (25) miles and Alternative 3 (1.1 miles). The number of road crossings over all inventoried streams for the action alternatives (in decreasing order) are Alternative 5B (37); Alternative 6 (36); Alternative 4A (31) and Alternative 3 (3).

Cumulative Effects of Roads and Stream Crossings

Cumulative lengths of roads within watersheds would include proposed new specified and spur road construction as well as previously constructed specified roads. The greatest cumulative length of these roads would occur in Alternative 5B (61.3 miles), followed in descending order by Alternative 6 (57.8 miles), Alternative 4A (53.1 miles) and Alternative 3 (29.6 miles). The "no action" alternative would maintain the existing specified road length of 28.1 miles. The number of past and proposed road crossings over all inventoried streams for the action alternatives follows (in decreasing order): Alt. 5B (61); Alt. 6 (60); Alt. 4A (55); Alt. 3 (27); and Alt. 1 (24).

4 Environmental Consequences

Wetlands

The following replaces the discussion on wetlands in the Bohemia FSEIS, Chapter 4, pages 9 - 10.

Executive Order 11990, as amended, requires Federal agencies exercising statutory authority and leadership over Federal lands to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands. Federal agencies are required to preserve and enhance the natural and beneficial values of wetlands in carrying out their responsibilities for: 1) acquiring, managing, and disposing of lands and facilities; 2) providing federally undertaken, financed, or assisted construction and improvements; and 3) conducting Federal activities and programs affecting land use.

Because wetlands are so extensive in the Bohemia area it is not feasible to avoid wetland areas. It is possible, however, to avoid development activities on the most biologically significant wetlands. Roads and timber harvest in all alternatives avoid these areas. There will be no direct effects to the fens, estuarine salt marshes, subalpine wetlands, lakes and small ponds in any alternative.

In all alternatives, roads were located to avoid the fen on the east toe slope of Bohemia Mountain. No roads or other facilities will be constructed in or adjacent to salt marshes. No timber will be harvested within 1000 feet of these wetlands. No activities are planned in subalpine wetlands nor within 200 feet of any lake or pond. The wetland types that will be directly affected by roads and/or timber harvest are the more extensive, less biologically significant bogs and forested wetlands.

Roads and Wetlands

Wetland vegetation, soil drainage, and the hydric character of a wetland is permanently altered by road construction for the width of the road fill itself. This is approximately 24 feet wide and equates to approximately 2.9 acres per mile of road. Road construction on wetlands will be limited to the needed transportation components of roads, landings, and associated drainage structures necessary for timber harvest operations and resource protection. Appropriate BMPs and mitigation measures are incorporated into road designs to minimize effects on water quality and maintain wetland functions. Rock overlay construction on wetlands provides a highly permeable fill that, along with adequate cross drain culverts, minimizes changes in hydrologic conditions. The amount of change in surface or subsurface water flow within a bog due to road construction has not been measured but is expected to be very small.

Subtle changes in wetland vegetation associated with roads have been observed on similar soils of Kupreanof and Mitkof Islands. A small increase in vigor and growth of some species such as shore pine, spruce, and sedges and a decrease in the abundance of some mosses have been observed in a few scattered locations adjacent to roads within muskegs. These changes are limited to a short distance (50 to 75 feet) on the downslope side of the road and are thought to result from the slight dewatering effect of road drainage. Ditch construction on open muskeg bogs in the Bohemia area will be minimized to the extent required to avoiding waterlogging the road prism.

Timber Harvest and Wetlands

Timber harvest is expected to have minimal long-term effects upon the physical, chemical and biological functions of wetlands. Removal of the forest overstory may temporarily change the hydrology of the site. Increased snow accumulation and a slight increase in soil moisture is expected until vegetation is established. The plant community will, of course, be changed from a mature old-growth stand to a young even-aged stand. Plant species composition will not be appreciably altered; however, community structure and understory biomass will change during secondary succession following logging (Alaback 1982).

Timber site productivity on wetland soils is typically lower than on better drained soils. Growth rates on wetland sites are expected to be slower than non-wetland sites, and merchantable timber may not be available in a 100-year rotation. Based on investigations of 25- to 35-year-old second-growth stands on wetland sites on Kupreanof Island, all were adequately stocked with hemlock and spruce. Measured growth rates, however, are very slow on these excessively wet sites.

The amount of timber harvest on forested wetlands is displayed in table 4-1. The amount of road building on bogs and forested wetlands is displayed in Table 4-2.

Table 4-1. Timber Harvest on Forested Wetlands (acres)

Existing	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
26	0	1	234	250	244

Table 4-2. Roads on Bogs and Forested Wetlands (miles)

Existing	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
0	0	0	13.5	17.3	14.3

Wildlife

There is the potential for short-term noise disturbance of wildlife residing in Portage Bay as a result of the realignment of road 6031. No additional impacts to wildlife are anticipated.

Sensitive Species

Currently nine vertebrate species are listed as sensitive. Of these, only the trumpeter swan, osprey, Queen Charlotte goshawk, and the Peale's peregrine falcon are known or are expected to occur within the Stikine Area. Of these four, only the goshawk has been sighted within the study area.

Trumpeter swans, osprey, and Peale's peregrine falcon have not been found within the study area, so this timber sale should not have any direct, indirect, or cumulative effects on them.

4 Environmental Consequences

Goshawk

Currently no nests have been located within the study area. Goshawk surveys have been conducted within the study area, along the existing roads and within each harvest unit proposed by the alternatives for the timber sale. Goshawk surveys have also been conducted outside of the study area, along the existing roads within VCUs 443 and 444. Surveys were conducted in 1993 and 1994, with 119 and 316 calling stations being completed, respectively.

One adult goshawk was observed in late August of 1992 near unit 538. Surveys have been conducted within the area without locating a nest. The adult goshawks, especially females, are known to disperse from their nesting area after breeding season. This observation may have been a dispersing goshawk, a non-breeder, or a goshawk which was foraging far from the nest site.

A juvenile goshawk was observed within the muskegs west of unit 541 during the time when the juveniles have fledged from the nest. Juveniles are known to move great distances from the nest, some as far as 50 miles. It can not be concluded that this bird's nest is within the study area.

Table 4-3 displays the effects of past activities and each of the alternatives on specified volume classes within the study area. Current data suggests that goshawks use timbered areas containing greater than 8,000 board feet/acre (Volume class 4+) a majority of the time, with a disproportionately greater amount of use in 20,000 board feet/acre or greater (Volume class 5+) timbered stands. Past activities have removed 1 and 2 percent of the volume class 4+ and 5+, respectively (Alternative 1). The greatest impacts would occur with implementation of alternatives 5B and 6, removing 7 and 10 percent of the volume class 4+ and 5+ from the original condition, respectively.

This timber sale along with the past cumulative actions may reduce goshawk habitat. We do not have sufficient data at this time to determine how a reduction of 10 percent (Alternative 5B and 6) of the volume class 5+ stands within the study area would affect goshawks. Goshawks are known to successfully nest within areas where moderate levels of timber harvest have occurred, such as Rowan Creek on Kuiu Island.

Table 4-3. Remaining CFL Acres and Percentages for the Original Condition and After Alternative Implementation.

Volume Class	Original Condition	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
4	26222 (100)	25840 (99)	25501 (97)	25013 (95)	24459 (93)	24494 (93)
5	14213 (100)	13585 (99)	13526 (95)	13280 (93)	12756 (90)	12771 (90)

Candidate Species

The following are additions to the Candidate Species described in the FSEIS, Chapter 4, page 21.

Alexander Archipelago Wolf

For estimating the habitat capability for wolves within the study area, we used the wolf habitat capability model developed for the TLMP Revision (Suring and DeGayner 1988). The wolf model estimate is based on the prey species habitat capability. For the wolf habitat capability model, we used estimates for the Sitka black-tailed deer (see *Bohemia Mountain FSEIS, Chapter 14, Page 15, Table 4-12*) and an estimate of 1 moose per square mile for the study area (a moose model does not exist for the Tongass NF). The estimate of 1 moose per square mile was held constant for all alternatives, though we

expect to see a slight increase in the moose population in the area with additional timber harvest. This increase may only occur for approximately 20 years, since canopy closure of the harvested stands will reduce forage for moose.

Within the Study Area (VCUs 442 and 424) the habitat capability is estimated to have been 5.01 wolves before 1954 and to be 4.85 wolves currently. The largest reduction from the original condition (1954) would be 0.3 wolves for alternative 5B. Since the deer population is not at carrying capacity (i.e. the habitat capability numbers), we do not believe that the wolf population is at habitat capability. Based on deer pellet counts within VCU 442, the wolf population may presently be approximately 1/2 of the habitat capability value.

Table 4-4 displays the habitat capability for wolves after implementation of alternatives.

Table 4-4 Habitat Capability (Number of Wolves) for Wolves within the Study Area.

VCU	Alt. 1	Alt 3	Alt. 4A	Alt. 5B	Alt. 6
424	3.57	3.57	3.50	3.49	3.50
442	1.28	1.24	1.28	1.22	1.22
Total	4.85	4.81	4.78	4.71	4.72

An interagency committee studying viable wildlife populations recommended the following standards and guidelines to maintain viable and well distributed populations of wolves (Suring et al 1994).

* Where roads are joined to communities, road density within any 3 contiguous Wildlife Analysis Areas (WAAs) should not exceed 1.0 mile per square mile. Because the coastline provides similar waterborne access to these same wolves, the miles of skiff-accessible beach should be added to road miles when calculating "road density." Generally 10 percent of the total coastline may be considered accessible by skiff.

* Habitat capability necessary to provide for equilibrium populations of predators and prey should be maintained wherever possible. As a general rule, where deer are the primary prey item for wolves, sufficient habitat capability to support at least 5 deer per square mile should be retained.

Road density was analyzed within the 3 WAAs (5135, 5136, and 5137) the study area entirely or partially overlaps (*Map 3-7 FSEIS, Chapter 3, page 14*). Currently there are approximately 43.25 miles of open road and 77 miles of coastal shoreline associated with the 3 WAAs. Kirchhoff (Suring et al 1994) used a factor of 10 percent for the coastal areas with dependable access for trapping. For the 3 WAAs, we assumed that 30 percent of the coast had dependable access, since areas along Frederick Sound would be exposed to harsh winter weather. The road density is currently 0.28 miles per square mile and would be as high as 0.40 miles per square mile if alternative 5B would be implemented. If all coastal miles were considered, the highest density would be 0.62 miles per square mile (alternative 5B). Both of these figures are far below the 1.0 mile per square mile maximum density suggested to maintain viable populations of wolves.

4 Environmental Consequences

Table 4-5 displays the road and accessible beach miles per square mile within the 3 WAAs.

Table 4-5 Density of Road and Accessible Coast within WAAs 5135, 5136, and 5137 by Alternative.*

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Density	0.28	0.28	0.38	0.40	0.39

* Miles per square mile

The deer habitat capability density within the study area will support at least 5 deer per square mile for any of the alternatives. The density will be reduced the most with the implementation of alternative 5B.

Table 4-6. Density of Deer Within the Study Area Based on Habitat Capability.*

VCU	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
424	11.33	11.33	11.07	11.03	11.07
442	22.78	21.93	22.78	21.59	21.59

* This is the number of deer per square mile at habitat capability.

Kittlitz Murrelet

Since the Kittlitz murrelet is not known to occur within the study area and seems to be associated with the coastal mountainous areas of the mainland, the sale is expected to have no impact on Kittlitz murrelets.

Olive-sided Flycatcher

Though information on this species is limited, we believe that the population of olive-sided flycatchers will remain stable or possibly increase within the study area. Most forested edge habitat associated with beaver ponds is protected by TTRA fish stream buffers, and harvesting of old-growth stands will produce additional forested edge habitat.

Sensitive Plants

The five plant habitats that occur in the study area that may have sensitive plants are: forest edge, forest, open forest, stream sides and river banks, and bogs (muskegs).

The analysis area has a high proportion of muskeg (24%) and open forest (44%), with the remainder primarily closed forest habitat. Forest edges are present where forests and muskegs meet. Streams are present and 37 stream crossings are planned in Alternative 5B.

Under Alternative 5B, about 250 acres of open forest will be harvested out of 30,030 acres, about 0.8% of the open forest habitat. For forest habitat, 2.3% of volume class 4, 8.4% of volume class 5 and 6.4% of volume class 6 will be harvested from the study area. Roads will traverse about 17.3 miles through muskeg and open forests and will affect an additional 50 acres. Total acreage affected is less than 1% (0.63%) of these habitats.

No Sensitive Plants were found in any of the proposed harvest units.

Chorls bog orchid (*Platanthera chorisiana*) was found at eleven locations along the proposed road system, both within the proposed road corridor and adjacent to the corridor. The number of plants found on a site ranged from one to 22. A total of 100 plants were found.

The proposed timber harvest and road system will affect less than one percent of the habitat capable of supporting *Platanthera chorisiana* in the study area. The impact of this project will not contribute to loss of species viability or create significant trends toward Federal listing.

Recreation

The following replaces the second complete paragraph on page 35, Chapter 4, in the Bohemia Mountain Timber Sale FSEIS.

All action alternatives might result in small impacts to users of the trails, cabins, and Wilderness due to distant views and sounds of harvesting, construction, and hauling/sorting/loading activities. Use of these roads is not anticipated to change much as a result of implementing these alternatives. Potential opportunities for Kupreanof might be impacted, depending on the market segment of users they attracted to the area and how purist they might be in their pursuits.

Timber

The realignment of road 6031 increases the logging and roading costs in Alternative 5B.

Timber Sale Economics

The purpose of an economic analysis is to provide a means by which short-term costs and revenues for each alternative can be compared. This economic analysis is done for the purpose of relative ranking of the alternatives only. Actual timber values and costs at the time of the sale may deviate, due to fluctuations in market conditions, from the numbers displayed in the alternative comparisons.

Timber markets vary during the time between planning and actually selling a timber sale. Timber values can change by as much as \$200 per thousand board feet during this period. Due to these market variations, the estimate of timber end-product selling value was based on the mid-market level.

The mid-market assessment is based on weighted average pond log values, estimated logging and roading costs, normal profit ratios, and base rates in effect on the date the Forest Service initiates the NEPA process with publication of a Notice of Intent in the Federal Register. The initial Notice of Intent for Bohemia Mountain Timber Sale EIS was published in the Federal Register on Monday, January 22, 1990.

A recent timber market assessment (Morse, 1994) confirms that there is available capacity and strong market demand for this timber volume, and this sale is expected to sell.

4 Environmental Consequences

Table 4-7. Mid-Market Timber Values and Costs by Alternative

	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Timber Value (\$/MBF)*	0	234	243	241	241
Total Logging Costs (\$/MBF)	0	194	225	204	216
Specified Road Construction Costs (\$/MBF)	0	9	175	121	111
Total Costs (\$/MBF):	0	203	400	325	327
Net (\$/MBF):	0	31	-157	-84	-81

* Timber value in (\$/MBF) is pond log value minus 60% normal profit and risk.

Units Added:

Units 539 and 541 were added to the Bohemia Timber Sale between the draft SEIS and final SEIS.

Unit 539 is located high on the east slope of Bohemia Mountain, adjacent to proposed Unit 511. This unit is in Alternatives 4A, 5B and 6. This unit is approximately 41 acres and has an estimated 1,542 MBF of net saw timber. The only resource concern identified was scenic quality. Consequently the unit was reshaped and reduced in size to meet the visual quality objective of Partial Retention.

Unit 541 is located near the center of the study area between Bohemia Mountain and Portage Bay. It is offered in only Alternative 5B. The unit boundary encompasses approximately 105 acres but only 35 of those acres will be harvested, in small patch clearcuts. This unit will contribute about 570 MBF of net saw timber to the sale. Fisheries and wildlife concerns along the Class 1 stream west of the unit were addressed by the 100 foot stream buffer.

Transportation

The realignment of Road 6031 moves it out of the LUD II lands. *The section "Road Development in a LUD II Area" is no longer relevant in the FSEIS, Chapter 4, page 47.*

The realigned route crosses a section of moderately steep side slopes for approximately 0.6 mile. Full bench and end-haul will be necessary on slopes greater than 60 percent. This same segment will have a section of steep (>14%) adverse haul grade. The additional road construction and log haul costs are incorporated in the previous Table 4-7, Mid Market Timber Values and Costs by Alternative.

Road density: The 0.5 mile of forest development road added as a result of realignment of Road 6031 does not increase the road density (as defined by the number of miles of forest development road in a square mile) appreciably in Alternative 5B.

Clearing Acres: The additional 0.5 mile of Road 6031 will result in an increase of 3.4 acres of roadway clearing. Table 4-8 compares road clearing acres by alternative.

Table 4-8. Road Construction Clearing Acres by Alternative

Road Network	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Bohemia Roads	63	63	207	217	205
Portage Roads	45	50	45	65	65

Energy Requirements

The additional 0.5 mile of specified road construction in alternative 5B will result in consumption of an additional 2,010 gallons of fuel.

Table 4-9 shows the energy used for each action alternative:

Table 4-9. Estimated Fuel Consumption by Alternative.

Fuel Use	Alt. 1	Alt. 3	Alt. 4A	Alt. 5B	Alt. 6
Gallons/1,000	0	149	291	518	503
Gallons/MBF	0	14	16	15	15

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Alternative 4A	S-3,4,5; 2-2,5,6,7,8,9; 4-1,3,5,6,7,8,9
Alternative 5B	S-3,4,5; 2-1,2,4,5,6,7,8,9; 4-1,3,4,5,6,7,8,9
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Appendix A

BOHEMIA MOUNTAIN TIMBER SALE - PLANNED UNIT CARD**UNIT DESCRIPTION**

UNIT NUMBER(S):	439, 539, 639	AGE CLASS:	200+	VCU:	424
MANAGEMENT AREA:	S10	LUD CLASS:	IV	ACRES:	41
PREDOMINANT SPECIES: W. Hemlock, S. spruce, Alaska cedar					

UNIT ATTRIBUTES

HARVEST METHOD:	High Lead				
VOLUME/ACRE (NET SAWLOG) (MBF)	37	NET SAW (MBF):	1,542		

This unit is made up of a portion of what was Unit 211 in the FEIS.

MANAGEMENT OBJECTIVES - RESOURCE CONCERNS OR OPPORTUNITIES**VISUALS:**

The unit is high on the slope, so it is likely to be seen from Portage Bay and Fredrick Sound. - Meet TLMP's recommended VQO range of "Partial Retention" to "Maximum Modification".

RECREATION SETTING: CURRENT: P AFTER HARVEST: RM

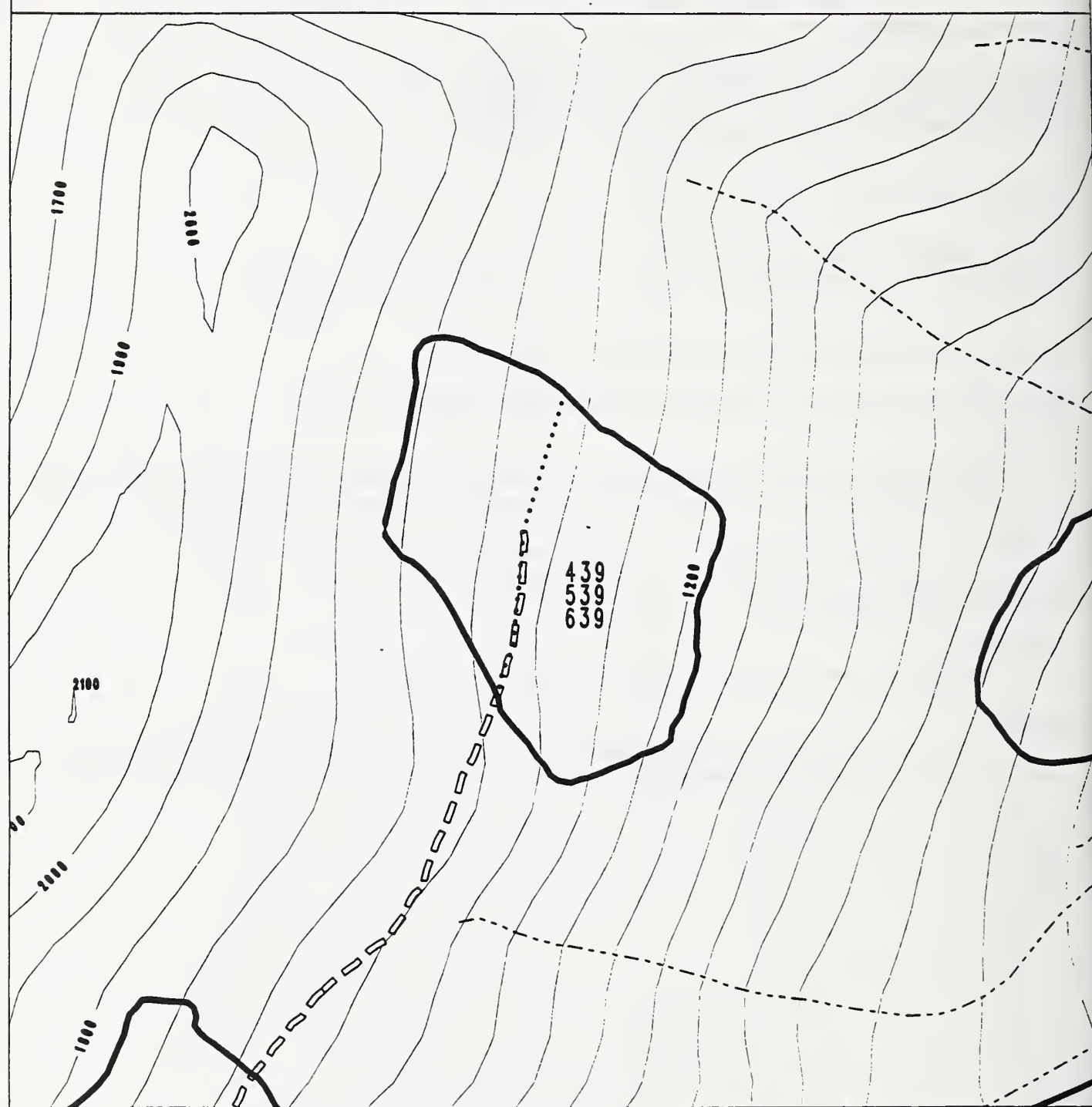
IMPLIMENTATION DIRECTION**VEGETATION:**

Manage as an even-aged stand, clearcut for natural regeneration.

VISUALS:

This unit was designed to meet the visual quality objective of "Partial Retention". It was reshaped and reduced in size in order to lessen visual impacts.

UNIT MAP 4A-439 5B-539 6-639



	UNIT BOUNDARY	100 Ft Contour Interval		SALTWATER
	SETTING BOUNDARY			1000' ESTUARY BUFFER
	EXISTING SPECIFIED ROAD	0 330 660 990 1320 Feet 1 Inch = 660 Feet		100' TTRA BUFFER
	PROPOSED SPECIFIED ROAD			LAKES
	PROPOSED TEMPORARY ROAD	F FULL SUSPENSION YARDING		STREAM - CLASS I
	HARVESTED UNIT	P PARTIAL SUSPENSION YARDING		STREAM - CLASS II
	PARTIAL HARVEST BEFORE 1930			STREAM - CLASS III



BOHEMIA MOUNTAIN TIMBER SALE - PLANNED UNIT CARD**UNIT DESCRIPTION**

UNIT NUMBER(S):	541	AGE CLASS:	200+	VCU:	442
MANAGEMENT AREA:	S10	LUD CLASS:	IV	ACRES:	35
PREDOMINANT SPECIES:					

UNIT ATTRIBUTES

HARVEST METHOD:	High Lead		
VOLUME/ACRE (NET SAWLOG) (MBF)	17	NET SAW (MBF):	570

MANAGEMENT OBJECTIVES - RESOURCE CONCERNS OR OPPORTUNITIES**FISHERIES:**

Anadromous fish habitat may be jeopardized. - Protect fish habitat (BMP 13.16, 05).

WILDLIFE:

Harvest activity will affect beaver habitat. - Minimize the impacts on beaver habitat.

RECREATION SETTING: CURRENT: P AFTER HARVEST: RM

IMPLEMENTATION DIRECTION**VEGETATION:**

Small patch clearcuts will be used to protect advanced natural regeneration. Approximately one third (35 acres total) of the area within the unit boundary will be harvested. Leave a buffer on the LUD II boundary so that no commercial timber is felled in a LUD II area.

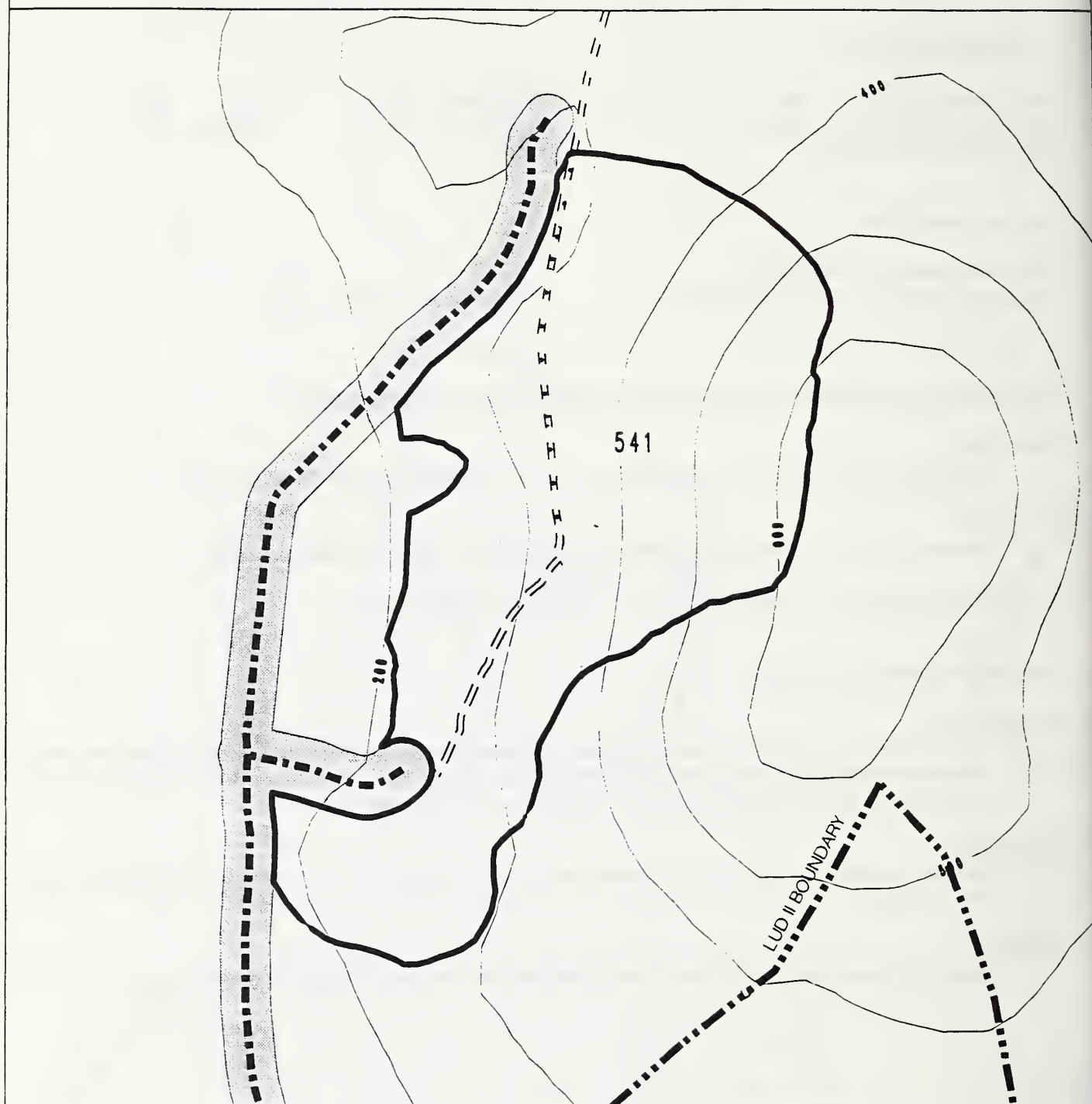
FISHERIES:

Maintain a minimum 100 foot uncut buffer on the west unit boundary, and the tributary on the southwestern boundary.

WILDLIFE:

Buffer protection of the fish streams within the unit will also act to protect beaver habitat.

UNIT MAP 5B-541



	UNIT BOUNDARY	100 Ft Contour Interval		SALTWATER
	SETTING BOUNDARY	0 330 660 990 1320 Feet		1000' ESTUARY BUFFER
	EXISTING SPECIFIED ROAD	1 Inch = 660 Feet		100' TTRA BUFFER
	PROPOSED SPECIFIED ROAD			LAKES
	PROPOSED TEMPORARY ROAD			STREAM - CLASS I
	HARVESTED UNIT	F FULL SUSPENSION YARDING		STREAM - CLASS II
	PARTIAL HARVEST BEFORE 1930	P PARTIAL SUSPENSION YARDING		STREAM - CLASS III

Appendix B

APPENDIX B

PLANNED ROAD DESCRIPTION

PROJECT NAME: *Bohemia Mountain Timber Sale* MGT AREA: S-10 VCU: 424/442

ROAD NUMBER: 6031 FUNCTIONAL CLASS: *Collector* ENTRY CYCLE: *Constant*

LENGTH: *10.7 miles* TRAFFIC SERVICE LEVEL: *C* DESIGN SPEED: *20 MPH*

TERMINI: Junction of proposed road 6032.1 (T57S,R76E,Sec.2) to an intersection with an existing spur road. (T57S,R77E,Sec.14).

DESIGN VEHICLE: *Log Truck* CRITICAL VEHICLE: *Lowboy* HIGHWAY SAFETY ACT: *No*

MAINTENANCE LEVELS: (ACTIVE SALE) 3 POST SALE: 2

INTENDED PURPOSE: To connect the Bohemia Mountain transportation network with the Portage Bay transportation network; providing access to the log transfer facility and for timber and forest administration.

TRAFFIC MANAGEMENT STRATEGY: Keep open for forest administration. Restrict to high-clearance vehicles.

EROSION CONTROL: No unusual problems anticipated on this road segment.

ROAD LOCATION: The main objectives for road location is to keep the road as far back from the Goose Cove estuary at the head of Portage Bay to reduce impacts to estuarine wildlife habitat and to avoid the LUD II lands.

ROCK PITS: Flat topography along most of this segment, little if any quality rock available for road construction. Rock is available along the small ridge that separates Bohemia Mountain and Portage Bay at "G" on map. Consider crushed aggregate, 4 inch minus, from existing pits. Coordinate with the landscape architect on location and access design of rock pits. Consider rehabilitation of rock pits located adjacent to road 6031.

STREAM CROSSINGS: There are six class I/II fish stream crossings. Metal pipe arches are proposed for two small streams; a 40 foot bridge on a small coho salmon stream and a 90 foot bridge to be installed on Portage Creek. BMP's 14.17 and 14.36 apply.

TIMING RESTRICTIONS: Timing restrictions apply only to in-stream work where water quality standards will be compromised. Out-of-stream construction can be conducted outside of "timing windows".

A timing window of June 1, through August 15 will be required during construction of the permanent culverts or bottomless arches and the 40 foot bridge due to the chance that sedimentation from construction will be harmful to Coho salmon egg incubation. BMP 14.64 applies.

A timing constraint on bridge construction at the Portage Creek site which allows in stream construction from July 15, through August 15 is required to protect steelhead trout, pink and Coho salmon egg incubation. BMP 14.64 applies.

PLANNED ROAD DESCRIPTION

PROJECT NAME: *Bohemia Mountain Timber Sale* ROAD NUMBER: 6031

FUTURE NEEDS: This segment of road 6031 may contribute to a Kake - Petersburg connection.

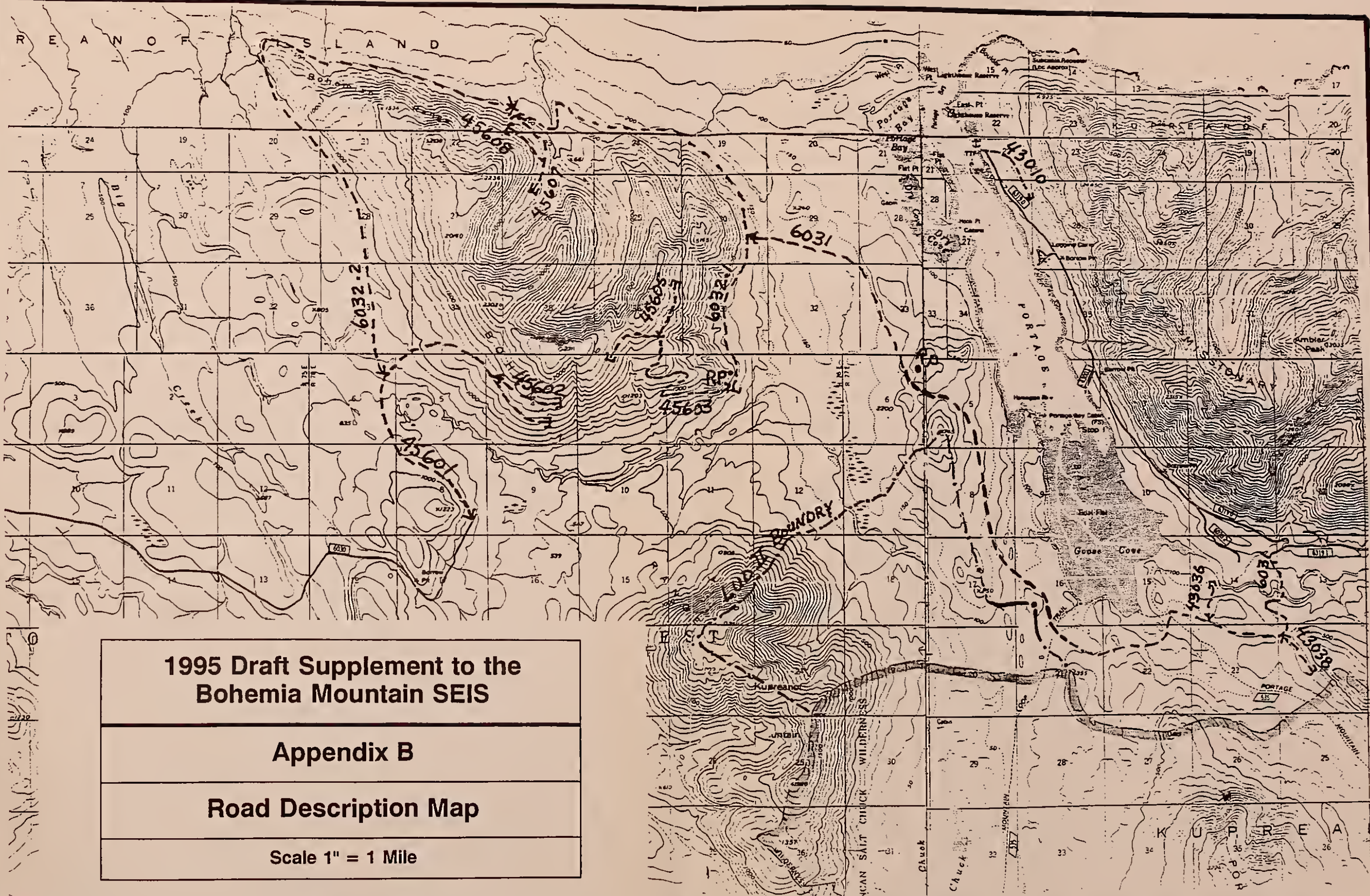
VEGETATIVE MGT: No special needs or considerations.

IMPLEMENTATION MONITORING: A basic soil and water review will be conducted to insure application of Best Management Practices (BMP's).

OTHER CONSIDERATIONS: Wildlife biologist input if raptor nests or other important wildlife concerns surface during road location.

Consider Central Tire Inflation or low pressure radial tires where marginal rock quality may cause a breakdown of road surfacing material. BMP 14.84 applies.

SPECIALISTS NEEDED: Landscape architect and Geotech Engineer to plan rock pits. A bridge design engineer and landscape architect to analyze the Portage Creek crossing. The landscape architect's interest is primarily the style of bridge to be used and provisions for parking because of the high potential recreational fishing use.



**1995 Draft Supplement to the
Bohemia Mountain SEIS**

Appendix B

Road Description Map

Scale 1" = 1 Mile



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